

REMARKS

In the interest of compact prosecution, the original Claims 1 and 5 are integrated, and constitutive elements of the original Claim 6 are also integrated to be of amended Claim 1. In the same manner, the original Claims 27 and 33 are integrated, and constitutive elements of the original Claim 34 are also integrated to be of amended Claim 27. Claims 5 and 33 are canceled accordingly.

In the amendments, the objects of the claims, except Claims 6 and 34, are amended to “a photoelectric conversion element” from “an electrode substrate.”

In Claims 1, 6, 27, and 34, “A semiconductor porous film” is amended to “an oxide semiconductor porous film,” based on FIG. 1A.

In Claims 6 and 34, “a sensitizing dye that is provided on a surface of the semiconductor porous film” is amended to “a sensitizing dye provided in the oxide semiconductor porous film,” based on lines 11 of page 16 of the English specification of the present application which is “An oxide semiconductor porous film 2 in which a sensitizing dye is provided.”

In Claims 1, 6, 27, 34, “a counter electrode” is amended to “a counter electrode, which has a different constitution from the electrode substrate and which is formed of a film made of a conductive material formed on a substrate” based on FIG. 1A and lines 17 to 23 of page 18 of the English specification of the present application which is “As the counter electrode 4 it is possible to use an electrode obtained by forming a thin film made up of a conductive oxide semiconductor such as ITO or FTO on a substrate made of an insulating material such as glass. Alternatively, the counter electrode 4 may be obtained by forming an electrode by evaporating or coating a conductive material such as gold, platinum, or a carbon based material on a substrate. It is also

possible to use an electrode obtained by forming a layer such as platinum or carbon on a thin film of a conductive oxide semiconductor such as ITO or FTO”.

In Claims 1, 6, 27, 34, “an electrolyte layer or charge transfer layer” is amended to “an electrolyte layer or charge transfer layer, which is adjacent to the oxide semiconductor porous film” based on FIG. 1A.

In the amendments, Claims 3, 4, 30, and 31 are amended to production method claims.

Accordingly, no new matter is added by the amendments.

I. Claim Rejections – 35 U.S.C. § 102

Claims 1, 2, 4 and 5 are rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Kurth (WO00/48212; refer to US Patent No. 6,462,266 for translation).

As pointed out in M.P.E.P. § 2131, “[t]o anticipate a claim, the reference must teach every element of the claim.” Thus, “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. Of California*, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987).”

Applicants respectfully assert that the Office Action failed to provide a prior art reference that teaches every element as set forth in the amended claim.

Independent claim 1 recites a structure which includes “a counter electrode, which has a different constitution from the electrode substrate and a film made of a conductive material is formed on a substrate” and “an electrolyte layer or charge transfer layer, which is adjacent to the oxide semiconductor porous film” (emphasis added). The rest of the rejected claims depend from independent claim 1 and thus also incorporate the electrode and the electrolyte layer or charge transfer layer as recited in claim 1.

However, Kurth fails to disclose any a structure which includes the electrode and the electrolyte layer or charge transfer layer as recited in claim 1, and Applicants respectfully submit that Kurth does not teach or suggest all the claim limitations of the invention, either explicitly or inherently.

Specifically, in Kurth, the constitution of the counter electrode and the electrode substrate are the same, that is, the constitutions of a lower part made of reference numbers 3, 6, 8, 10, and 12 and an upper part made of reference numbers 2, 5, 7, 10, and 11 are the same.

Accordingly, Applicants respectfully request that the above rejection under 35 U.S.C. § 102 be reconsidered and withdrawn.

II. Claim Rejections-35 U.S.C. § 103

1. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurth as applied to claim 2 above, and further in view of Otake *et al.* (U.S. Patent 4,521,251; “Otake”).

Dependent claim 3 depends from claim 1 and thus also require structure which includes the electrode and the electrolyte layer or charge transfer layer as recited in claim 1.

As discussed above, Kurth fails to teach or suggest any a structure which includes the electrode and the electrolyte layer or charge transfer layer as recited in claim 1. Otake fails to cure the deficiency of Kurth because Otake does not even disclose any structure equivalent to a photoelectric conversion element as recited in claim 1.

Accordingly, Applicants respectfully request that the above rejections under 35 U.S.C. § 103 be reconsidered and withdrawn.

2. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurth (WO00/48212, refer to U.S. Patent 6,462,266 for translation) in view of Nakamura (U.S. Patent 6,291,763).

Independent claim 6 also recites a structure which includes “a counter electrode, which has a different constitution from the electrode substrate and a film made of a conductive material is formed on a substrate” and “an electrolyte layer or charge transfer layer, which is adjacent to the oxide semiconductor porous film.”

However, as discussed above, Kurth fails to disclose any a structure which includes the electrode and the electrolyte layer or charge transfer layer as recited in claim 6.

Moreover, Nakamura also fails to disclose any a structure which includes the electrode and the electrolyte layer or charge transfer layer as recited in claim 6. Specifically, in Nakamura, there exists a spacing layer 10 between a semiconductor layer 14 and a porous electron-conducting layer 11, as shown in FIGS 2A to 2D and FIGS 3E to 3G and as described in lines 19 to 21 of column 2. Therefore, an electrolyte layer or a charge transfer layer is NOT adjacent to the oxide semiconductor porous film in Nakamura. On the other hand, in the present application, an electrolyte layer or a charge transfer layer 5(6) is adjacent to the oxide semiconductor porous film 2.

Further, in presently claimed invention, since there is no spacing layer between the electrolyte layer or charge transfer layer and the oxide semiconductor porous film in the present application, it is possible to shorten the distance between the electrode substrate 1 and the counter electrode 4 by the thickness of the spacing layer. This is beneficial in that the shorter the distance between the electrode substrate and the counter electrode, the less resistance the electrons, which move between the electrode substrate and the counter electrode, encounter. Therefore, it is considered that the solar cell of Nakamura has less efficiency than the present application.

Not only the existence of the spacing layer as described above but also the spacer layer of D3 being “electrically insulating with electrical conductivity of 1×10^{-6} Siemens/cm or less” as described in lines 3 to 7 of Claim 1 of Nakamura is considered to support the benefit of the presently claimed invention considering the resistance the electrons encounter. Thus, Applicants submit that the present application has a distinct constitution which has distinct effect over any cited prior art documents.

For the reasons set forth above, Applicants submit that the combination of Kurth and Nakamura fails to teach or suggest any a structure which includes the electrode and the electrolyte layer or charge transfer layer as recited in claim 6.

Accordingly, Applicants respectfully request that the above rejection under 35 U.S.C. § 103 be reconsidered and withdrawn.

3. Claims 27-31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurth (WO00/48212, refer to U.S. Patent 6,462,266 for translation) in view of Mohri *et al.* (U.S. Patent 4,396,682; “Mohri”).

Independent claim 27 also recites a structure which includes “a counter electrode, which has a different constitution from the electrode substrate and a film made of a conductive material is formed on a substrate” and “an electrolyte layer or charge transfer layer, which is adjacent to the oxide semiconductor porous film.” The rest of the rejected claims depend from independent claim 27 and thus also incorporate the electrode and the electrolyte layer or charge transfer layer as recited in claim 27.

As discussed above, Kurth fails to teach or suggest any a structure which includes the electrode and the electrolyte layer or charge transfer layer as recited in claim 27. Mohri fails to

cure the deficiency of Kurth because Mohri does not even disclose any structure equivalent to a photoelectric conversion element as recited in claim 27.

Accordingly, Applicants respectfully request that the above rejections under 35 U.S.C. § 103 be reconsidered and withdrawn.

4. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurth (WO00/48212, refer to U.S. Patent 6,462,266 for translation) in view of Mohri *et al.* (US 4396682; “Mohri”), and further in view of Nakamura (U.S. Patent 6,291,763).

Independent claim 34 also recites a structure which includes “a counter electrode, which has a different constitution from the electrode substrate and a film made of a conductive material is formed on a substrate” and “an electrolyte layer or charge transfer layer, which is adjacent to the oxide semiconductor porous film.”

As discussed above, the combination of Kurth and Nakamura fails to teach or suggest any a structure which includes the electrode and the electrolyte layer or charge transfer layer as recited in claim 34. Moreover, Mohri fails to cure the deficiency of Kurth and Nakamura.

Accordingly, Applicants respectfully request that the above rejections under 35 U.S.C. § 103 be reconsidered and withdrawn.

III. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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